LEMON GROVE CITY COUNCIL
AGENDA ITEM SUMMARY

Item No. 5
Mtg. Date May 1, 2018
Dept. Public Works

Item Title: Acceptance of the Pavement Management Program Report

Staff Contact: Mike James, Assistant City Manager / Public Works Director

Recommendation:

Adopt a resolution (**Attachment B**) accepting the pavement management program report (**Attachment B – Exhibit 1**).

Item Summary:

On November 7, 2017, the City awarded a professional services agreement to Nichols Consulting Engineers, CHTD (NCE) to update the pavement management program (PMP). The PMP was last updated in 2010 and has been used to establish a prioritization of streets receiving treatment in the City's street network. In April 2018, NCE completed the draft report. Since that time, city and NCE staff have worked together to revise the draft report to produce the final product (**Attachment B – Exhibit 1**).

This staff report (**Attachment A**) highlights key objectives in the report, provides additional information about updating the PMP, and describes next steps for the PMP moving forward.

Fiscal Impact:

NCE agreement total is an amount not to exceed $58,900. To date, $27,680 has been expended. The funding sources is the TransNet Fund (Account No. 14-00-00-7150).

Environmental Review:

☒ Not subject to review
☐ Negative Declaration
☐ Categorical Exemption, Section
☐ Mitigated Negative Declaration

Public Information:

☒ None
☐ Newsletter article
☐ Notice to property owners within 300 ft.
☐ Notice published in local newspaper
☐ Neighborhood meeting

Attachments:

A. Staff Report
B. Resolution

Attachment A

LEMON GROVE CITY COUNCIL
STAFF REPORT

Item No. 5

Mtg. Date May 1, 2018

Item Title: Acceptance of the Pavement Management Program Report

Staff Contact: Mike James, Assistant City Manager / Public Works Director

Background:

The City of Lemon Grove last updated its pavement management program (PMP) in 2010. Since then staff used the schedule and treatment types called for in the PMP to make up the list of streets treated as a part of its annual street rehabilitation capital improvement project.

Similar to the process followed in 2010, an update to the PMP will evaluate the condition of the street network to calculate a new pavement condition index (PCI) in order to prepare a five-year plan to repair the City's street network.

On November 7, 2017, the City awarded a professional services agreement to Nichols Consulting Engineers, CHTD (NCE) to update the PMP. In April 2018, NCE completed the draft report. Since that time, city and NCE staff have worked together to revise the draft report to produce the final product (**Attachment B – Exhibit 1**).

Discussion:

One of the most difficult tasks that a Public Works Department is charged with is to accurately forecast the rate of pavement deterioration over time. There are several variables that come into play that degrade street segments faster than others, such as:

- Age (since the age of many streets is unknown and pavements degrade at an exponentially faster rate as they age),
- Adequacy of drainage,
- Quality of the original construction, and
- Traffic volumes (which includes the percentage of heavy vehicular travel).

For these reasons staff continues to re-evaluate pavement conditions to ensure that the pavement system is rehabilitated in the most cost-effective manner possible. Furthermore, the type of treatment is a critical component of the PMP because matching the best treatment with the current condition of the street segment is vital to prolonging the street system.

Objectives of the PMP:

NCE identified four objectives when completing the PMP update. Staff listed the objectives with a brief description below.

1. *Implementation* – Assist the City with creating and implementing a PMP by inventorying the street sections and creating a document that will allow strategic decisions to be made by the City Council.

2. *Inspections* – Perform walking inspections of the entire street network and recommend the property PCI.

3. *Strategies* – Discuss and recommend the appropriate maintenance and rehabilitation (M&R) strategies.

4. *Budgetary Analysis* – Based on all known and estimated funding sources, create a budget analysis that will treat the existing system. Additionally, determine what the M&R funding needs are of the City.

PMP Update Process:

In February 2018, NCE performed a walking inspection of the entire street network, which consisted of approximately 70 centerline miles of streets of which 10.8 miles are arterials, 17.6 miles are collectors, 41.1 miles are residential, and 0.5 miles are parking lots. After the inspection, NCE concluded that the City's weighted (by area) PCI is 60. This is a fair condition.

Next, NCE reviewed the maintenance and rehabilitation (M&R) strategies with City staff. This process specifically focused on the selection of an appropriate and most effective treatments such as slurry seals or overlays and determining an accurate unit cost. City staff provided unit costs based on recent bid information that the City and other surrounding agencies have recently received. Once M&R alternatives were established NCE entered the information into StreetSaver for a five-year budgetary analysis based on the amount of funds the City anticipates to receive as well as what it would take to achieve a set PCI goal(s).

In close discussions with NCE, City staff concluded that there should be four funding scenarios that account for PCI goal(s) and deferred maintenance costs during the next five-year period.

1. *Scenario 1: City's Budget ($1.4 million)*: With a street M&R budget of $1.4 million, approximately $282,000 per year, the network PCI is expected to decrease from 60 to 51 and the deferred maintenance will increase from $18.7 million to $34.4 million by Fiscal Year (FY) 2022-23.
2. *Scenario 2 (**staff recommended**): City's Budget with Senate Bill 1 (SB 1) Funds ($3.2 million)*: The City will receive a total of $1.8 million SB 1 funding for street rehabilitation for the next five years. It makes a total of $3.2 million for the analysis period. The network PCI is expected to decrease to 53 and the deferred maintenance will increase to $33.3 million by FY 2022-23.
3. *Scenario 3: Maintain a PCI at 60 ($9 million)*: Approximately $9 million is required to maintain the citywide average PCI at 60; however, the deferred maintenance will continue to increase to $28.7 million by the end of FY 2022-23.
4. *Scenario 4 (**NCE recommended**): Improve PCI by 1 Point per Year ($13.4 million)* – Approximately $13.4 million is required for the City to improve the network PCI one point each year. The Citywide average PCI will improve to 65 and the deferred maintenance will increase to $26 million by FY 2022-23.

Next Steps:

Pending the City Council's approval of the PMP and the final recommendation to move forward with a scenario, the next step will be for NCE to perform deflection testing on roads that are recommended for structural improvement, including overlays, mill-and-fills, reclamation, and reconstruction. Roads that are only recommended for preventative maintenance treatments will not be tested.

Staff posed the question to NCE regarding what deflection testing is and what are some of the specific details to describe how this process will work in the City, the following information was provided by NCE:

Deflection testing will be used to assess subgrade support, through correlation of subgrade stiffness to R-value, as well as determine required overlay thickness in accordance with the Caltrans Highway Design Manual (HDM) procedure in Section 635.1. Deflection testing will be performed using NCE's Dynatest model 8002 Falling Weight Deflectometer (FWD). The FWD generates a load that closely simulates a loaded moving truck tire. The load generated by the FWD is measured with a load cell, and the deflection of the pavement in response to that load is measured using an array of nine high-precision geophones. Using this load and deflection data, the stiffness of the pavement system as a whole can be computed, and in conjunction with layer thickness information the elastic modulus of individual pavement layers can be determined through a process known as back calculation. FWD testing at a single location takes approximately one minute allowing for far more test locations with less disruption to traffic than is possible through destructive testing such as coring and laboratory testing. Pavement designs based on FWD data can address the actual in-situ variability of existing subgrade any pavement materials that are to be re-used in place. In contrast, coring is limited to a much smaller number of test locations, and laboratory results are subject to differences between in-situ conditions and laboratory conditions. For example, laboratory R-value testing is performed at a standard compaction and moisture content that may or may not reflect actual field conditions.

Based on the deflection testing results, the streets identified for treatment may change in the next five-years. If the street list significantly changes (e.g. greater than 25 percent change in street listing), staff will return to the City for review, discussion and approval.

Conclusion:

That the City Council adopts a resolution (**Attachment B**) accepting the Pavement Management Program Report (**Attachment B – Exhibit 1**).

Attachment B

RESOLUTION NO. 2018 -

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LEMON GROVE, CALIFORNIA ACCEPTING THE PAVEMENT MANAGEMENT PROGRAM REPORT

WHEREAS, in 2010 the City Council approved the City's pavement management program (PMP) report; and

WHEREAS, the pavement management program is an analysis of the street network which generates a pavement condition index; and

WHEREAS, on November 7, 2017, the City awarded a professional services agreement to Nichols Consulting Engineers (NCE) to update the PMP; and

WHEREAS, NCE identified four objectives to include in the final PMP report that included inventorying of street sections, performing walking inspections of all street segments, recommending appropriate maintenance and rehabilitation strategies, and use estimated funding sources to complete a budget analysis; and

WHEREAS, in April 2017, NCE completed and submitted the final report to the City; and

WHEREAS, the City Council has reviewed and accepted the report (*Exhibit 1*).

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Lemon Grove, California hereby:

1. Accepts the final Pavement Management Program Report (*Exhibit 1*); and
2. Authorizes the City Manager or her designee to manage the project close out process.

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Attachment B – Exhibit 1

Due to the documents size, the Pavement Management Program Final Report may be accessed and downloaded from this link: www.tinyurl.com/2018PMP.